UNIX PRINTING SYSTEM

DRAFT - CUPS Interface Design Description
CUPS-IDD-1.0

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1 Scope

1.1 Identification

This interface design description document provides detailed file formats, message formats, and program conventions for the Common UNIX Printing System ("CUPS") Version 1.0.

1.2 System Overview

The Common UNIX Printing System provides a portable printing layer for UNIX® operating systems. It has been developed by Easy Software Products to promote a standard printing solution for all UNIX vendors and users. CUPS provides the System V and Berkeley command-line interfaces.

CUPS uses the Internet Printing Protocol (IETF-IPP) as the basis for managing print jobs and queues. The Line Printer Daemon (LPD, RFC1179), Server Message Block (SMB), and AppSocket protocols are also supported with reduced functionality.

CUPS adds network printer browsing and PostScript Printer Description ("PPD")-based printing options to support real world applications under UNIX.

1.3 Document Overview

This interface design description document is organized into the following sections:

- 1 - Scope
- 2 - References
- 3 - Internal Interfaces
- 4 - External Interfaces
- 5 - Command-Line Interfaces
- A - Glossary

2 References

2.1 CUPS Documentation

The following CUPS documentation is referenced by this document:

- CUPS-CMP-1.0: CUPS Configuration Management Plan
- CUPS-IDD-1.0: CUPS System Interface Design Description
- CUPS-SAM-1.0.x: CUPS Software Administrators Manual
- CUPS-SDD-1.0: CUPS Software Design Description
- CUPS-SPM-1.0: CUPS Software Programming Manual
- CUPS-SSR-1.0: CUPS Software Security Report
- CUPS-STP-1.0: CUPS Software Test Plan
- CUPS-SUM-1.0.x: CUPS Software Users Manual
- CUPS-SVD-1.0.x: CUPS Software Version Description

2.2 Other Documents

The following non-CUPS documents are referenced by this document:

- IEEE 1387.4, System Administration: Printing (draft)
- IPP/1.0: Additional Optional Operations - Set 1
- IPP/1.0: Encoding and Transport
- IPP/1.0: Implementers Guide
- IPP/1.0: Model and Semantics
- RFC 1179, Line Printer Daemon Protocol

2 References

3 Internal Interfaces

3.1 Character Set Files

3.2 Language Files

3.3 MIME Files

3.3.1 mime.types

3.3.2 mime.convs

3.4 PPD Files

3.5 Scheduler Configuration Files

3.5.1 cupsd.conf

3.5.2 printers.conf

3.5.3 classes.conf

4 External Interfaces

4.1 Application Socket Protocol

4.2 CUPS Browsing Protocol

4.3 CUPS PostScript File

CUPS PostScript files are device-dependent Adobe PostScript program files. The PostScript language is described in the PostScript Language Reference Manual, Third Edition.

4.4 CUPS Raster File

CUPS raster files are device-dependent raster image files that contain a PostScript page device dictionary and device-dependent raster imagery for each page in the document. These files are used to transfer raster data from the PostScript and image file RIPs to device-dependent filters that convert the raster data to a printable format.

A raster file begins with a four byte synchronization word: 0x52615374 ("RaSt") for big-endian architectures and 0x74536152 ("tSaR") for little-endian architectures. The writer of the raster file will use the native word order, and the reader is responsible for detecting a reversed word order file and swapping bytes as needed. The CUPS Interface Library raster functions perform this function automatically.

Following the synchronization word are a series of raster pages. Each page starts with a page device dictionary header and is followed immediately by the raster data for that page.

Bytes	Description	Values
0-63	MediaClass	Nul-terminated ASCII string
64-127	MediaColor	Nul-terminated ASCII string
128-191	MediaType	Nul-terminated ASCII string
192-255	OutputType	Nul-terminated ASCII string
256-259	AdvanceDistance	0 to 2^{32} - 1 pixels
260-263	AdvanceMedia	0 = Never advance roll 1 = Advance roll after file

		2 = Advance roll after job 3 = Advance roll after set 4 = Advance roll after page
264-267	Collate	0 = do not collate copies 1 = collate copies
268-271	CutMedia	0 = Never cut media 1 = Cut roll after file 2 = Cut roll after job 3 = Cut roll after set 4 = Cut roll after page
272-275	Duplex	0 = Print single-sided 1 = Print double-sided
276-283	HWResolution	Horizontal and vertical resolution in dots-per-inch.
284-299	ImagingBoundingBox	Four integers giving the left, bottom, right, and top positions of the page bounding box in pixels
300-303	InsertSheet	0 = Do not insert separator sheets 1 = Insert separator sheets
304-307	Jog	0 = Do no jog pages 1 = Jog pages after file 2 = Jog pages after job 3 = Jog pages after set
308-311	LeadingEdge	0 = Top edge is first 1 = Right edge is first 2 = Bottom edge is first 3 = Left edge is first
312-319	Margins	Left and bottom origin of image in pixels
320-323	ManualFeed	0 = Do not manually feed media 1 = Manually feed media
324-327	MediaPosition	Input slot position from 0 to N
328-331	MediaWeight	Media weight in grams per meter squared
332-335	MirrorPrint	0 = Do not mirror prints 1 = Mirror prints
336-339	NegativePrint	

4.5 Internet Printing Protocol

4.6 Line Printer Daemon Protocol

4.7 Parallel Device

4.8 Serial Device

4.9 Server Message Block Protocol

4.10 Trivial File Transfer Protocol

5 Command-Line Interfaces

5.1 Backend Interfaces

5.2 Filter Interfaces

A Glossary

A.1 Terms

C

A computer language.

parallel

Sending or receiving data more than 1 bit at a time.

pipe

A one-way communications channel between two programs.

serial

Sending or receiving data 1 bit at a time.

socket

A two-way network communications channel.

A.2 Acronyms

ASCII

American Standard Code for Information Interchange

CUPS

Common UNIX Printing System

ESC/P

EPSON Standard Code for Printers

FTP

File Transfer Protocol

HP-GL

Hewlett-Packard Graphics Language

HP-PCL

Hewlett-Packard Printer Control Language

HP-PJL

Hewlett-Packard Printer Job Language

IETF

Internet Engineering Task Force

IPP

Internet Printing Protocol

ISO

International Standards Organization

LPD

Line Printer Daemon

MIME

Multimedia Internet Mail Exchange

PCL

Page Control Language

PPD

PostScript Printer Description

SMB

Server Message Block

TFTP

Trivial File Transfer Protocol